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NGS Sets Commemorative Marker at Monticello

On October 14, NGS installed a survey marker commemorating the bicentennial of the Lewis and Clark Expedition on the West Lawn of Monticello. Along with NGS, representatives from the American Congress on Surveying and Mapping; Leica Geosystems; Thales Navigation; the Thomas Jefferson Foundation; Topcon Positioning Systems, Inc.; Trimble Navigation, Ltd.; and the Virginia Association of Surveyors participated in the celebration. Dan Jordan, president of the Thomas Jefferson Foundation, said of the marker, "It's a wonderful tribute to Jefferson's interest in science and a tribute to Jefferson's vision of Lewis and Clark's journey."

In the week following the installation, NGS and GPS manufacturers



Dan Jordan, president of the Thomas Jefferson Foundation, dedicates marker.

Leica, Thales, Topcon, and Trimble positioned the marker to an accuracy of one-half inch relative to the National Spatial Reference System.

The 12-inch diameter brass marker symbolizes the formation of the Corps of Discovery, part of Thomas Jefferson's Congressional act to chart the unexplored West.

Similar markers will be placed across the continent along Lewis and Clark's route, including Fort Clatsop National Memorial in Astoria, Oregon, the site of the Lewis and Clark Expedition's westernmost base camp.

The marker will be officially dedicated on January 14, 2003, at Monticello.



NGS Measures Subsidence in Louisiana

-By Tim Osborn

Louisiana's hurricane evacuation routes are growing increasingly vulnerable to coastal storm surge and flooding. Additionally, the loss of elevation in South Louisiana and growth of open water conditions along the coast make future storms and hurricanes more likely to flood evacuation routes, coastal towns, and ports and stress flood protection levees.

Recent work by NGS and Louisiana's Spatial Reference Center (located at Louisiana State University) focused a concerted effort on the surveying and analysis of coastal hurricane evacuation routes in Louisiana. "We saw a rapid flood of some key evacuation routes in the State and felt that an investigation into the elevations of evacuation routes and on the possible impact on them from coastal subsidence was warranted," said Charlie Challstrom, Director of NGS. A field team was assembled and sent to Louisiana and implemented an intensive eight

day survey of Highway-1, from Raceland to Grand Isle. "We felt this was a good route to survey and determine a present-day



Flooding in Louisiana

elevation of this highway. Because this is the only evacuation route for important coastal areas

depend daily on safe evacuation routes," said Charlie Challstrom.

Working in partnership with NGS, the Louisiana Spatial Reference Center analyzed hundreds of bench marks across coastal Louisiana and developed an analysis of subsidence that many coastal evacuation routes have experienced in the last 20 to 40 years. "What we saw was a picture of South Louisiana losing elevation (subsiding) at rates that are in excess of 1 inch per year in certain areas along the coast," said Dr. Roy Dokka, Director of the Spatial Reference Center. "We can now help in

projecting the future elevations of these evacuation routes in the future. We also can now start looking at real subsidence rates in Louisiana coastal wetlands and build a true picture of how southern Louisiana is subsiding and how this can be used in flood protection, evacuation route improvements, and coastal restoration work."



Hurricane evacuation route surveying team. From left to right: Davy Crockett, Cindy Craig, Bob Zurfluh, Kendall Fancher, and Roy Anderson.

such as Grand Isle and Port Fourchon, thousands of people that are working offshore

In American Samoa: Surveying for the Future



The primary tidal station

-By Roy Anderson

This past August, representatives from NGS went to American Samoa to upgrade the horizontal and vertical geodetic control of the Territory. The information gathered will provide the positional accuracy required to support the diversity of a Geographic Information System (GIS), engineering, geophysical, and charting and mapping applications for the Territory.

NGS performed the work in cooperation with the American Samoa Department of Commerce (DOC); American Samoa Department of Public Works (DPW); American Samoa Power Authority (ASPA); the National Park Service (NPS); NOAA's Coastal Services Center; and the

private firms of Ashtech Products, Inc. and Thales Navigation. These agencies assisted in the surveys and received training from NGS and Bob LeMoine of Ashtech that will enable them to

conduct similar surveys in the future.

The Global Positioning System (GPS) surveys were performed on July 30, 31, and August 1, 2002. Additional observations were done on the eastern end of Tutuila, the main island in American Samoa, tying bench

marks to the USGS points set in 1962. The American Samoan College will use this network in their surveying and engineering classes. On the western end of the island most of the bench marks were under canopy and not suitable for GPS observations. Although the field

observations started on July 30, 2002, the planning of this project took a considerable coordination of time and effort between the multiple organizations involved. The group came together on July 29 at the Conference Center in Pago Pago. The meeting gave participants a purpose and overview of the project. Practical skills such as GPS equipment setup and operation, how to fill out the observation logs, and



The crew

practice in setting up the equipment were also covered. Once the group became familiar with the procedures, station occupations were assigned. During the observing time frame, NGS visited each station to check on the operation and respond to questions and difficulties.

High Tech Meets High Muck

-By Joe Evjen

NOAA is contributing to a number of wetlands restoration projects to counteract losses in Chesapeake Bay fisheries and wildlife habitats. Working in concert with other components of NOAA Oceans and Coasts, NGS has recently contributed remote sensing and geodetic surveying technologies to a number of Chesapeake Bay marsh restoration projects.

At Anacostia in Washington D.C., Fort McHenry in Baltimore, and on Barren Island, NGS employed geodetic survey methods to compare the marsh surface elevation to local sea level models. This project provided NOAA scientists with practical experience in acquiring and utilizing high accuracy elevation data in a marsh restoration project. Orthorectified aerial photography shows site characteristics, along with differential leveling and static GPS to provide accurate positions and tidal datums to the project site. RTK surveys create digital elevation models of the wetland surface, and GIS brings the data together for review and analysis.



Frank Maida collects RTK observations in the marsh



Overlooking Fort McHenry at high tide



A color-shaded digital elevation model

Department of Commerce Medals Awarded to NGS

Gold Medal



Pictured above from left to right are Deputy Undersecretary Scott Gudes, LT Mike Weaver, Mike Aslaksen, Jason Woolard, LCDR Brad Kearse, LT Will Odell, and VADM Conrad Lautenbacher, Jr. Not pictured are Roy Anderson, CAPT Jon Bailey, Stephen Nicklas, and Ed Carlson.

On September 24, a team from NGS was awarded the U.S. Department of Commerce Gold Medal for Leadership. The Honor Awards Program summarizing their efforts states: "The group is honored for mapping the wreckage sites of the World Trade Center and the Pentagon following the September 11, 2001 terrorist attacks. They set up the Global Positioning System ground receivers at numerous points throughout the destruction area to locate underground utilities and pre-existing exit routes in the collapsed World Trade Center and to better position cranes for the removal of the massive amount of debris at Ground Zero. This highly-sensitive, emotionally-charged, and unprecedented assignment demanded an extremely motivated and flexible team able to exhibit great personal commitment under extremely stressful conditions."

Bronze Medal

On October 22, the Bronze Medal was awarded to a team from the National Geodetic Survey, the Coastal Services Center, and Pacific Services Center. Ed Carlson, Shepherd Cofer, Dave Doyle, Cindy Fowler, Darcee Killpack, Miranda Chin, Cindy Craig, Mark Eckl, Erik Hund, and Jason Woolard worked together in completing high-accuracy surveys to position U.S. territorial areas in the western Pacific Ocean with the Global Positioning System (GPS). The team overcame unique technical and cultural challenges, including the assimilation of comprehensive historical geodetic survey records from a variety of Federal and local agencies. The team also established Continuously Operating Reference Stations on the islands of Tutillia and Saipan to provide the public with 24 hour-a-day access to high accuracy GPS data via the Internet. The improved geospatial reference frame they established will continue to provide high accuracy coordinates for coastal zone management, Geographic Information Systems, cadastral and engineering surveying, topographic mapping of the islands, and enhanced air and marine navigation safety. The Bronze Medal was presented at the University of Maryland University College Inn and Conference Center.



NGS Holds Convocation for Employees

On November 4-7, NGS held a Convocation for all employees at the Silver Spring facility. NGS employees, including Silver Spring employees, Norfolk staff, state advisors, state coordinators and liaisons, and state agency sponsors, attended the meetings. The goal of the Convocation was to improve



Marilyn Vorhauer and Bob Zurfluh sharing ideas

(ESC) of NGS has already addressed a number of the substantive issues, action items, and recommendations discussed at the Convention.

ESC has indicated that this Convocation has been the most successful of its kind thus far. Participation was more widespread, especially from the Norfolk staff.

ESC is committed to continuing to host Convocations on a periodic basis and to tackling the issues raised. In order to devote more time to leadership regarding the Action Items identified, the ESC will create a separate Management Team to focus on the day-to-day operations of NGS.



The first day of the NGS Convocation

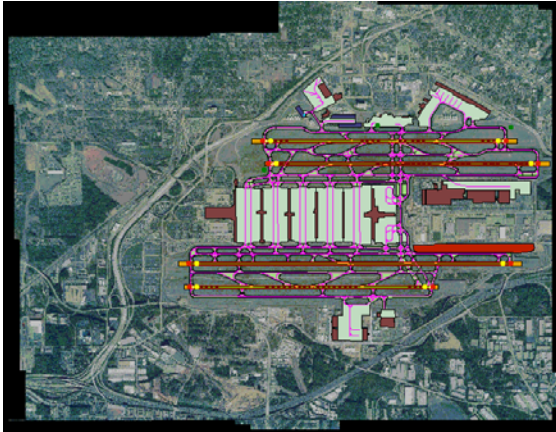
communication within NGS in general, to discuss current and future plans for NGS and its parent agencies, to provide an opportunity to discuss the interests of various NGS constituency groups, and to facilitate the integration of field and headquarters staff.

The NGS Convocation was set up as a series of panel discussions, interspersed with presentations from the state advisors. The Executive Steering Committee



Gilbert Mitchell, Sharon Faber, and Ron Neighbors

Aeronautical Survey Program Surpasses GIS Goal in FY02



A delineation of data collected at The William B. Hartsfield Atlanta International Airport.

The SafeFlight-21 Program was developed by the FAA to reduce ground incidents by promoting situational awareness to both pilots and airport ground controllers. One way to heighten this awareness is to have a graphical display in the cockpit that shows the plane's exact position on the airfield. The National Geodetic Survey's Aeronautical Survey Program (ASP), as part of its ongoing Interagency Agreement, was tasked to create highly accurate airport Geographic Information Systems (GIS) at high risk airports to assist with the implementation of Moving Map Display technology in aircraft.

The ASP delivered 33 SafeFlight-21 GIS data sets, three more than requested, to the SF-21 Program Office prior to deadline. The FAA has already asked for these data sets for 20 additional airports and will likely increase the order in FY-03. For more information, contact Jeff Hagan.

Letters to NGS

Note: This letter is an excerpt of the original.

To: opus@ngs.noaa.gov

I would like to let you know how much of an integral part your OPUS program played on a recent Aerial Photo project.

Back in April of this year our department received funding approval to acquire Digital Orthophotography of the county. It was my task to "survey" in a network of control panel points for the project. We had to survey in 26 control points (mostly PLSS corners) for the project. Fifteen coordinates would be delivered to the contractor and 11 (check coordinates) would be held back to compare the contractor's final results to and verify the accuracy of the data we were to receive from them. After getting the "X"s painted on all of the control points we had approximately two weeks to finish the survey. Due to the contractor's specification that the control was **not** be done using RTK GPS methods, we had to GPS the positions using static methods. Having the limited use of the third receiver basically ruled out attempting a traditional GPS network survey. I had heard of the OPUS program about a year ago at some of our MNDOT Surveying and Engineering seminars from some of the NGS advisors. We were going to run four hour sessions on each point to be sure we had enough data to obtain a good result, both horizontally and vertically. There were a few skeptics when I proposed how we should do this job and how long we should run each session. But my supervisors, the County Surveyor and the Public Works Director, are very open-minded about using new innovations and techniques. It took a little more than a week (with some overtime) to get all 26 points GPS'd and post processed. After getting the "final" coordinates on all of the points the project encountered some unforeseen (snow related) delays. I was able to wait until the precise ephemeris data was available and re-submitted the GPS data and came up with a new, more accurate, set of "final" coordinates. I was hoping to see results of at least <.03m horizontally and <.06m vertically. These precisions were met and easily exceeded! We have recently received the data back on the check points from the contractor. The accuracy of the aerial solutions well exceeded our original goals.

Whenever starting a survey now we try to set our control using the OPUS program. I felt like I needed to thank someone for making this such an enjoyable and seemingly effortless project. The geodetic toolkit is a great help to me and I appreciate the time and effort put into the programs. Thanks again.

Russ Heiling
Engineering Technician III
Sherburne County (Minnesota) Public Works
Email russ.heiling@co.sherburne.mn.us

OPUS Adds New Features

-By Gerry Mader

Since the beginning of December, OPUS users have been able to select the reference sites that OPUS uses to position the RINEX files that they submit. Ordinarily, OPUS uses the three CORS or IGS sites located closest to the user's data to compute three separate solutions. These solutions are then averaged to find the OPUS solution. Now, rather than let OPUS select these reference sites, the user may select one, two, or all three of the reference sites. If the user specifies less than three sites, OPUS will select the remaining sites from the other nearby stations.

This feature was added for those users who need consistency among their reference sites while working in a particular region or for those who need to use local reference sites or cooperative CORS that might not otherwise be selected by OPUS. While the current station selection list includes the National CORS, OPUS expects to add the facility to specify cooperative CORS sites in the near future.

OPUS will now also accept compressed RINEX files. This new feature will significantly reduce the time required to upload data files.

OPUS acknowledges the contributions of Neil Weston, Don Haw, and Julie Prusky for developing and testing these new features.



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Upcoming Events

January 6 - 9 - Coastal GeoTools Conference in Charleston, South Carolina.

January 14 - Dedication Ceremony of the Corps of Discovery II marker at Monticello. Set by NGS, this marker commemorates the bicentennial celebration of the Lewis and Clark Expedition.

March 10 - 15 - Western Pacific Regional GPS, GIS, Cadastral Survey Conference and Technical Programs in Koror, Palau.

March 30 - April 1 - 2003 American Congress on Surveying and Mapping Annual Conference in Phoenix, Arizona.

For a complete listing of workshops and events, please see <http://www.ngs.noaa.gov/INFO/conferences.shtml>

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The National Geodetic Survey is managed by NOAA Oceans and Coasts.